WHAT IS CLAIMED IS:

1. A wear resistant member composed of silicon nitride sintered body containing 1 – 10 mass% of rare earth element in terms of oxide thereof as sintering agent, wherein a total oxygen content of said silicon nitride sintered body is 6 mass% or less, a porosity of said silicon nitride sintered body is 0.5 vol.% or less, and a maximum size of pore existing in grain boundary phase of the silicon nitride sintered body is 0.3 μm or less.

2. The wear resistant member according to Claim 1, wherein said silicon nitride sintered body has a three point bending strength of 900MPa or more and a fracture toughness of 6.5MPa · $m^{1/2}$ or more, and a rolling life defined as a rotation number of steel balls rolling along a circular track formed on the wear resistant member formed of said silicon nitride sintered body until a surface of said silicon nitride wear resistant member peels off is 1×10^8 or more, when said rolling life is measured in such a manner that a circular track having a diameter of 40mm is set on the wear resistant member, three rolling balls each having a diameter of 9.525mm and composed of SUJ2 are provided on said circular track, and the rolling balls are rotated on the track at a rotation speed of 1200 rpm under a condition of being applied with a pressing load of 400Kg.

3. The wear resistant member according to Claim 1, wherein said silicon nitride sintered body has a crash strength of 200MPa or more and a fracture toughness of 6.5MPa · $m^{1/2}$ or more, and a rolling fatigue life defined as a time until a surface of rolling balls composed of said silicon nitride wear resistant member rolling along a circular track formed on a steel plate peels off is 400 hours or more,

when said rolling fatigue life is measured in such a manner that three rolling balls each having a diameter of 9.525mm are formed from said silicon nitride wear resistant member, said three rolling balls are provided on the circular track having a diameter of 40mm set on the steel plate formed of SUJ2, and the rolling balls are rotated at a rotation speed of 1200 rpm on the track under a condition of being applied with a pressing load so as to impart a maximum contact stress of 5.9GPa to the balls.

4. The wear resistant member according to any one of Claim 1 to 3, wherein said silicon nitride sintered body contains at most 5 mass% of at least one of aluminum and magnesium in terms of the amount of oxide thereof.

5. The wear resistant member according to Claim 1, wherein said silicon nitride sintered body contains at most 5 mass% of aluminum nitride.

6. The wear resistant member according to Claim 1, wherein said silicon nitride sintered body contains at most 5 mass% of at least one element selected from the group consisting of Ti, Hf, Zr, W, Mo, Ta, Nb and Cr in terms of oxide thereof.

7. The wear resistant member according to Claim 2 or 3, wherein said wear resistant member composed of silicon nitride sintered body is a rolling bearing member.

8. The wear resistant member according to Claim 1, wherein said silicon nitride sintered body is mainly composed of silicon nitride and contains a little

amount of oxygen, said silicon nitride sintered body comprises an outer peripheral portion having an oxygen content lower than that of a center portion, and a difference of the oxygen contents between the outer peripheral portion and the center portion is within a range of 0.2-2 mass%.

9. The wear resistant member according to Claim 1, wherein said silicon nitride sintered body has a Vickers' hardness of 1200 or more.

10. The wear resistant member according to Claim 8, wherein a difference in content of metal contained as sintering agent in the outer peripheral portion and the center portion is 0.2 mass% or less.

11. The wear resistant member according to Claim 8, wherein said silicon nitride sintered body comprises an intermediate portion of which oxygen content is at most 1 mass% lower than that of the center portion.

12. The wear resistant member according to Claim 8, wherein said wear resistant member composed of the silicon nitride sintered body is a bearing ball.

13. The wear resistant member according to Claim 12, wherein said bearing ball has a diameter of 9mm or more.

14. A method of manufacturing a wear resistant member composed of silicon nitride sintered body comprising the steps of:

preparing a material mixture by adding 1 to 10 mass% of a rare earth element in terms of the amount of an oxide thereof to a silicon nitride powder

containing at most 1.5 mass% of oxygen and 75-97mass% of α-phase type silicon nitride and having an average grain size of 1.0μm or less;

molding said material mixture to form a compact;

degreasing said compact;

heating and holding said compact at a temperature of 1,250-1,600℃ for a predetermined period of time on the way to a sintering step; and

conducting a main sintering for the compact at a temperature of 1,650-1,850℃ thereby to form a wear resistant member composed of silicon nitride sintered body.

15. The method of manufacturing the wear resistant member composed of silicon nitride sintered body according to Claim 14, wherein said method further comprising a step of: moderately cooling the sintered body at a cooling rate of at most 100℃ per hour until the sintering temperature is reduced to a point at which a liquid phase formed by the rare earth element during the sintering step solidifies.

16. The method of manufacturing the wear resistant member composed of silicon nitride sintered body according to Claim 14, wherein at most 5 mass% of at least one of aluminum and magnesium in terms of the amount of oxide thereof is added to said silicon nitride powder.

17. The method of manufacturing the wear resistant member composed of silicon nitride sintered body according to Claim 14, wherein at most 5 mass% of aluminum nitride is added to said silicon nitride powder.

18. The method of manufacturing the wear resistant member composed of

silicon nitride sintered body according to Claim 14, wherein at most 5 mass% of at least one element selected from the group consisting of Ti, Hf, Zr, W, Mo, Ta, Nb and Cr in terms of oxide is added to said silicon nitride powder.

19. The method of manufacturing the wear resistant member composed of silicon nitride sintered body according to Claim 14, wherein said method further comprising a step of: conducting a hot isostatic pressing treatment (HIP) to said silicon nitride sintered body in non-oxidizing atmosphere of 300atm or more at a temperature of 1,600-1,850℃ after completion of the sintering step.